CLAIMS

What is claimed is:

1. An isolated polypeptide selected from the group consisting of:

(a) a polypeptide comprising amino acid residues 19-45 of SEQ ID NO:2;

(b) a polypeptide comprising amino acid residues 18-45 of SEQ ID NO:2;

(c) a polypeptide comprising amino acid residues 1-45 of SEQ ID NO:2;

(d) a polypeptide comprising amino acid residues 60-149 of SEQ ID NO:2;

(e) a polypeptide comprising amino acid residues 46-149 of SEQ ID NO:2;

(f) a polypeptide comprising amino acid residues 19-149 of SEQ ID NO:2;

(g) a polypeptide comprising amino acid residues 18-149 of SEQ ID NO:2;

(h) a polypeptide comprising amino acid residues 1-149 of SEQ ID NO:2; and

(i) a polypeptide comprising amino acid residues 18-459 of SEQ ID NO:2.

2. An isolated polypeptide according to claim 1, wherein said polypeptide further comprises a moiety selected from the group consisting of: affinity tags, toxins, radionucleotides, enzymes, and fluorophores.

3. A fusion protein comprising a first portion and a second portion joined by a peptide bond, said first portion consisting of a polypeptide selected from the group consisting of:

(a) a polypeptide comprising amino acid residues 19-45 of SEQ ID NO:2;

(b) a polypeptide comprising amino acid residues 18-45 of SEQ ID NO:2;

(c) a polypeptide comprising amino acid residues 1-45 of SEQ ID NO:2;

(d) a polypeptide comprising amino acid residues 60-149 of SEQ ID NO:2;

(e) a polypeptide comprising amino acid residues 46-149 of SEQ ID NO:2;

(f) a polypeptide comprising amino acid residues 19-149 of SEQ ID NO:2;

(g) a polypeptide comprising amino acid residues 18-149 of SEQ ID NO:2;

(h) a polypeptide comprising amino acid residues 1-149 of SEQ ID NO:2; and

(i) a polypeptide comprising amino acid residues 18-459 of SEQ ID NO:2; and

said second portion comprising another polypeptide.

4. A fusion protein according to claim 3, wherein said second portion is a collagen-like domain or a C1Q domain from an adipocyte complement related protein.

5. An isolated polypeptide according to claim 1, wherein the polypeptide is selected from the group consisting of:

(a) a polypeptide consisting of amino acid residues 19-45 of SEQ ID NO:2;

(b) a polypeptide consisting of amino acid residues 18-45 of SEQ ID NO:2;

(c) a polypeptide consisting of amino acid residues 1-45 of SEQ ID NO:2;

(d) a polypeptide consisting of amino acid residues 60-149 of SEQ ID NO:2;

(e) a polypeptide consisting of amino acid residues 46-149 of SEQ ID NO:2;

(f) a polypeptide consisting of amino acid residues 19-149 of SEQ ID NO:2;

(g) a polypeptide consisting of amino acid residues 18-149 of SEQ ID NO:2;

(h) a polypeptide consisting of amino acid residues 1-149 of SEQ ID NO:2; and

(i) a polypeptide consisting of amino acid residues 18-459 of SEQ ID NO:2.

6. An isolated nucleic acid molecule encoding a polypeptide selected from the group consisting of:

(a) a polypeptide comprising amino acid residues 19-45 of SEQ ID NO:2;

(b) a polypeptide comprising amino acid residues 18-45 of SEQ ID NO:2;

(c) a polypeptide comprising amino acid residues 1-45 of SEQ ID NO:2;

(d) a polypeptide comprising amino acid residues 60-149 of SEQ ID NO:2;

(e) a polypeptide comprising amino acid residues 46-149 of SEQ ID NO:2;

(f) a polypeptide comprising amino acid residues 19-149 of SEQ ID NO:2;

(g) a polypeptide comprising amino acid residues 18-149 of SEQ ID NO:2;

(h) a polypeptide comprising amino acid residues 1-149 of SEQ ID NO:2; and

(i) a polypeptide comprising amino acid residues 18-459 of SEQ ID NO:2.

7. An isolated nucleic acid molecule encoding a polypeptide according to claim 6, wherein said polypeptide further comprises a moiety selected from the group consisting of: affinity tags, toxins, radionucleotides, enzymes, and fluorophores.

8. A nucleic acid molecule encoding a fusion protein comprising a first portion and a second portion joined by a peptide bond, said first portion consisting of a polypeptide selected from the group consisting of:

(a) a polypeptide comprising amino acid residues 19-45 of SEQ ID NO:2;

(b) a polypeptide comprising amino acid residues 18-45 of SEQ ID NO:2;

(c) a polypeptide comprising amino acid residues 1-45 of SEQ ID NO:2;

(d) a polypeptide comprising amino acid residues 60-149 of SEQ ID NO:2;

(e) a polypeptide comprising amino acid residues 46-149 of SEQ ID NO:2;

(f) a polypeptide comprising amino acid residues 19-149 of SEQ ID NO:2;

(g) a polypeptide comprising amino acid residues 18-149 of SEQ ID NO:2;

(h) a polypeptide comprising amino acid residues 1-149 of SEQ ID NO:2; and

(i) a polypeptide comprising amino acid residues 18-459 of SEQ ID NO:2; and

said second portion comprising another polypeptide.

9. A nucleic acid molecule encoding a fusion protein according to claim 8, wherein said second portion is a collagen-like domain or a C1Q domain from an adipocyte complement related protein.

10. An isolated nucleic acid molecule according to claim 6, wherein the nucleic acid molecule encodes a polypeptide selected from the group consisting of:

(a) a polypeptide consisting of amino acid residues 19-45 of SEQ ID NO:2;

(b) a polypeptide consisting of amino acid residues 18-45 of SEQ ID NO:2;

(c) a polypeptide consisting of amino acid residues 1-45 of SEQ ID NO:2;

(d) a polypeptide consisting of amino acid residues 60-149 of SEQ ID NO:2;

(e) a polypeptide consisting of amino acid residues 46-149 of SEQ ID NO:2;

(f) a polypeptide consisting of amino acid residues 19-149 of SEQ ID NO:2;

(g) a polypeptide consisting of amino acid residues 18-149 of SEQ ID NO:2;

(h) a polypeptide consisting of amino acid residues 1-149 of SEQ ID NO:2; and

(i) a polypeptide consisting of amino acid residues 18-459 of SEQ ID NO:2.

11. An isolated nucleic acid molecule selected from the group consisting of:

(a) a nucleic acid molecule consisting of nucleotides 56-136 of SEQ ID NO:1;

(b) a nucleic acid molecule consisting of nucleotides 53-156 of SEQ ID NO:1;

(c) a nucleic acid molecule consisting of nucleotides 2-156 of SEQ ID NO:1;

(d) a nucleic acid molecule consisting of nucleotides 179-448 of SEQ ID NO:1;

(e) a nucleic acid molecule consisting of nucleotides 137-448 of SEQ ID NO:1;

(f) a nucleic acid molecule consisting of nucleotides 56-448 of SEQ ID NO:1;

(g) a nucleic acid molecule consisting of nucleotides 53-448 of SEQ ID NO:1;

(h) a nucleic acid molecule consisting of nucleotides 2-448 of SEQ ID NO:1;

(i) a nucleotide molecule consisting of nucleotides 2-1378 of SEQ ID NO:1; and

(j) a nucleic acid molecule consisting of SEQ ID NO:3 or SEQ ID NO:7.

12. An expression vector comprising the following operably linked elements:

a transcription promoter;

a DNA segment encoding a polypeptide with an amino acid sequence consisting of:

(a) amino acid residues 19-45 of SEQ ID NO:2;

(b) amino acid residues 18-45 of SEQ ID NO:2;

(c) amino acid residues 1-45 of SEQ ID NO:2;

(d) amino acid residues 60-149 of SEQ ID NO:2;

(e) amino acid residues 46-149 of SEQ ID NO:2;

(f) amino acid residues 19-149 of SEQ ID NO:2;

(g) amino acid residues 18-149 of SEQ ID NO:2;

(h) amino acid residues 1-149 of SEQ ID NO:2 and

(i) a polypeptide consisting of amino acid residues 18-459 of SEQ ID NO:2; and

a transcription terminator.

13. An expression vector according to claim 12, further comprising a secretory signal sequence operably linked to the DNA segment.

14. A cultured cell into which has been introduced an expression vector according to claim 12, wherein the cell expresses a polypeptide encoded by said DNA segment.

15. A method of producing a polypeptide comprising:

culturing a cell according to claim 14; and isolating the polypeptide produced by the cell.

16. A method of producing an antibody to a polypeptide comprising:

inoculating an animal with a polypeptide selected from the group consisting of:

(a) a polypeptide consisting of 9 to 252 amino acids, wherein the polypeptide is a contiguous sequence of amino acids in SEQ ID NO:2 from amino acid residue 1 to amino acid residue 459;

(b) a polypeptide consisting of amino acid residues 19-45 of SEQ ID NO:2;

(c) a polypeptide consisting of amino acid residues 18-45 of SEQ ID NO:2;

(d) a polypeptide consisting of amino acid residues 1-45 of SEQ ID NO:2;

(e) a polypeptide consisting of amino acid residues 60-149 of SEQ ID NO:2;

(f) a polypeptide consisting of amino acid residues 56-149 of SEQ ID NO:2;

(g) a polypeptide consisting of amino acid residues 19-149 of SEQ ID NO:2;

(h) a polypeptide consisting of amino acid residues 18-149 of SEQ ID NO:2;

(i) a polypeptide consisting of amino acid residues 1-149 of SEQ ID NO:2; and

(j) a polypeptide consisting of amino acid residues 18-459 of SEQ ID NO:2; and

wherein the polypeptide elicits an immune response in the animal to produce the antibody; and

isolating the antibody from the animal.

17. An antibody produced by the method of claim 16, which binds to a polypeptide of SEQ ID NO:2.

18. An antibody according to claim 17, wherein said antibody is selected from the group consisting of:

(a) polyclonal antibody;

(b) murine monoclonal antibody;

(c) humanized antibody derived from b);

(d) an antibody fragment; and

(e) human monoclonal antibody.

19. An antibody fragment according to claim 18, wherein said antibody fragment is selected from the group consisting of F(ab')$_2$, F(ab), Fab', Fab, Fv, scFv, and minimal recognition unit.

20. An anti-idiotype antibody that specifically binds to said antibody of claim 17.

21. An antibody that specifically binds to a polypeptide of claim 1.